SportsMedUpdate

Professor Martin P Schwellnus, *University of Cape Town, South Africa*

COMPARISON OF EFFECTS OF CYRIAX PHYSIOTHERAPY, A SUPERVISED EXERCISE PROGRAMME AND POLARIZED POLYCHROMATIC NON-COHERENT LIGHT (BIOPTRON LIGHT) FOR THE TREATMENT OF LATERAL EPICONDYLITIS

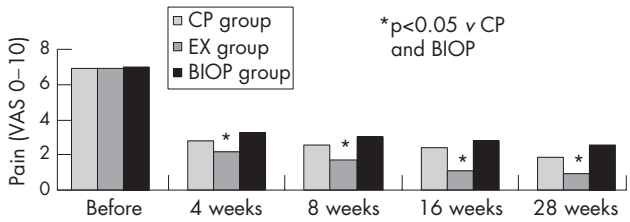
Stasinopoulos D, Stasinopoulos I. *Clin Rehabil* 2006;**20**:12–23

Background:
There are many possible therapeutic interventions for lateral epicondylopathy (tennis elbow), including physiotherapy, exercise rehabilitation and, recently, polarised polychromatic non-coherent (Bioptron) light.

Research question/s:
What is the effectiveness of Cyriax physiotherapy, a supervised exercise and polarised polychromatic non-coherent light (Bioptron light) in the treatment of lateral epicondylitis?

Methodology:
Subjects: 75 patients with clinically diagnosed lateral ''epicondylitis''.
Experimental procedure: Subjects were sequentially allocated to 3 treatment (3/week) groups for 4 weeks: Cyriax physiotherapy (CP = 25), supervised exercise (EX = 25) and polarised polychromatic non-coherent light (Bioptron light) (BIOP = 25). Pain, function and grip strength were assessed before and after 4, 8, 16 and 28 weeks.
Measures of outcome: Pain (visual analogue scale; VAS), function (VAS), pain-free grip strength.

Main finding/s:



Improvement of function was also greatest in the EX group compared with the other groups at any of the follow-up time points ($p<0.05$).

Conclusion/s:
Compared with Cyriax physiotherapy or polarised polychromatic non-coherent light (Bioptron light), a supervised exercise programme was superior in pain reduction and improved function in the management of patients with lateral epicondylitis.

Evidence based rating: 7/10 **Clinical interest rating:** 7/10
Type of study: Non randomised, clinical trial
Methodological considerations: No randomisation of subjects, no placebo control group included, other activities not monitored during follow-up
Keywords: lateral epicondylitis, treatment, Cyriax physiotherapy, exercise, Bioptron light

PHYSICAL PERFORMANCE IN PERIPHERAL ARTERIAL DISEASE: A SLOWER RATE OF DECLINE IN PATIENTS WHO WALK MORE

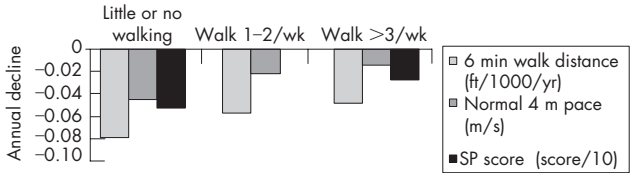
McDermott MM, Liu K, Ferrucci L, *et al. Ann Intern Med* 2006;**144**:10–20

Background:
It is not known whether patients with peripheral arterial disease (PAD) who regularly walk for exercise have less functional decline than those with less walking activity.

Research question/s:
Do patients with PAD who report that they walk for exercise >3 times per week have less annual functional decline than those who walk for exercise less frequently?

Methodology:
Subjects: 417 patients with PAD (>55 yrs, males and females).
Experimental procedure: All the subjects were classified at baseline and annually according to the number of times they reportedly walked for exercise per week (groups: walking >3/wk, 1–2/wk, and little or no walking). Functional measurements (6-minute walk distance, 4-metre walking speed, summary performance score) were measured at baseline and annually. Subjects had a median follow-up of 36 months (24–36 months).
Measures of outcome: Annual decline in function (6-minute walk distance, normal and fast 4-metre walking velocity, summary performance score) in three groups (adjusted for age, sex, ethnicity, co-morbid conditions, body mass index, ankle-brachial index, education, leg symptoms, cigarette use, geriatric depression score, previous year's level of functioning, and patterns of missing data).

Main finding/s:



Asymptomatic patients who walked for exercise >3/wk had annual declines in 6-minute walking performance ($p=0.107$), normal-paced walking velocity ($p=0.065$), and the summary performance score ($p=0.115$), but these declines were smaller than those observed in asymptomatic participants who walked <3/wk.

Conclusion/s:
Patients suffering from PAD who perform self-directed walking exercise at least 3 times weekly have significantly less functional decline during the subsequent year.

Evidence based rating: 7.5/10 **Clinical interest rating:** 8/10
Type of study: Prospective cohort study
Methodological considerations: No cause-effect can be determined, small sample size in subgroups, other health behaviours were not controlled for in the follow-up, self-reported data
Keywords: peripheral vascular disease, exercise, walking, longer term functional outcome

BIOMECHANICAL FACTORS ASSOCIATED WITH TIBIAL STRESS FRACTURE IN FEMALE RUNNERS

Milner C, Ferber R, Pollard CD, *et al. Med Sci Sports Exerc* 2006;**38**(2):323–8

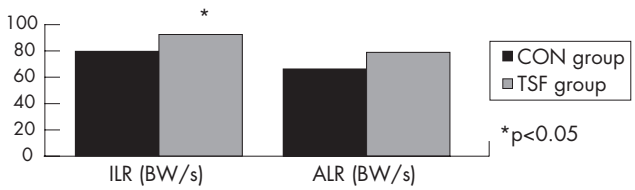
Background:
Tibial bone stress injuries are common in female runners and many possible extrinsic and intrinsic risk factors have been identified.

Research question/s:
Do differences in structure and running mechanics exist between trained distance runners with a history of prior tibial stress fracture and those who have never sustained a fracture?

Methodology:
Subjects: 40 female runners (rearfoot strike pattern, 18–45 yrs, running >32 km/wk): 20 subjects with a history of tibial stress fractures (TSF

group), 20 controls (CON group) (matched for age, mileage) with no previous lower extremity bony injuries.
Experimental procedure: All subjects underwent kinematic and kinetic testing (overground running with standard running shoes at 3.7 m/s using a 6-camera motion capture system, force platform, and accelerometer). Vertical impact peak (VIP), instantaneous (ILR) and average (ALR) vertical loading rates, instantaneous and average loading rates during braking, knee flexion excursion, ankle and knee stiffness, and peak tibial shock were measured. Tibial area moment of inertia was calculated from tibial *x* ray studies for a subset of runners.
Measures of outcome: Kinematic and kinetic variables.

Main finding/s:



Magnitude of tibial shock successfully predicted in which group runners would be in 70% of cases.

Conclusion/s:
Increased vertical impact loading rate is associated with tibial bone stress injuries in female runners.

Evidence based rating: 7/10 **Clinical interest rating:** 8/10
Type of study: Cross sectional study
Methodological considerations: No cause effect can be determined, retrospective data
Keywords: tibia, bone stress injuries, biomechanics, ground reaction forces, kinematics, tibial shock

INFLUENCE OF HIGH-INTENSITY TRAINING AND OF DIETETIC AND ANTHROPOMETRIC FACTORS ON MENSTRUAL CYCLE DISORDERS IN BALLET DANCERS

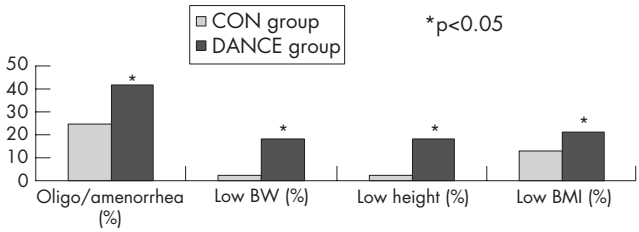
Castelo-Branco C, Reina F, Montivero AD, *et al. Gyn Endocrinol* 2006;**22**(1):31–5

Background:
Many potential factors for observed menstrual irregularities in female athletes have been identified including intensity of exercise, low-energy consumption, type and amount of training, and others.

Research question/s:
What is the influence of intensive training, dietetic and anthropometric factors on menstrual cycles in female ballet dancers?

Methodology:
Subjects: 115 adolescent girls (12–18 yrs): dancers (DANCE = 38) and a control group (CON) (age-matched girls, not engaged in any sports activity).
Experimental procedure: All the subjects underwent (1) a structured interview (during which information was obtained relating to menstrual and hormonal history, weight changes, training, clinical history), and a physical examination including anthropometry, (2) a nutritional assessment (food frequency questionnaire) and (3) assessment of level of physical activity.
Measures of outcome: Daily energy expenditure, intake, fat intake, meals per day, anthropometric scores.

Main finding/s:



32% of the DANCE group were on a weight-control diet and only 12% in the CON group (OR 3.49, 95% CI 1.31 to 9.25).

Conclusion/s:
In ballet dancers, high-intensity training was associated with the late onset of menarche, menstrual disorders, lower weight and height development, and abnormal eating behaviour.

Evidence based rating: 7/10 **Clinical interest rating:** 7/10
Type of study: Case control study
Methodological considerations: No cause effect can be determined from a case control design
Keywords: menstrual cycle disorders, ballet, amenorrhea, exercise, nutrition, food-energy intake